

Survivability Program

Ensuring Space and Missile Defense Operations in Hostile Environments

The System Directorate Survivability Program ensures that space and missile defense systems can survive and operate in hostile battlefield conditions, including nuclear, chemical, conventional blast and fragmentation, directed energy, electromagnetic, and natural environments.

All phases of acquisition are supported with activities ranging from requirement allocation to concurrent survivability engineering and hardware validation. A series of hostile environment models and simulations is maintained and ensures that cost-effective, balanced survivability solutions are obtained with elements of hard-to-find, hard-to-kill, and operational tactics.

The Directorate pursues survivability technology research and development and also provides direct acquisition program support. Technology programs support multiple services, including the Missile Defense Agency (MDA) and the Measurement and Signature Intelligence office, and leverage some of the most advanced research facilities in the world. Direct acquisition support is provided to MDA, the U.S. Army Program Executive Office for Air and Missile Defense, and the U.S. Army Aviation and Missile Command.

Ongoing efforts within the Systems Directorate enable emerging missile defense technologies to operate in hostile environments and lay the groundwork for supporting the Army Objective Force.

Project Office Support

In cooperation with MDA, the Systems Directorate supports missile defense program managers' efforts to assure their systems operate in hostile environments, including weapons of mass destruction.

Recent accomplishments include development of nuclear and chemical decontamination procedures for the PATRIOT rocket launcher and communication shelters and completion of a field experiment to demonstrate an innovative long-range nuclear material detector.

Hostile Environment Models

The Directorate maintains a number of models that simulate various hostile environments on the battlefield.

- The Blast, Dust, and Thermal Model analyzes the effects of a nuclear explosion on air and ground systems.
- The Total Radiation Environment Model analyzes the effects of prompt and persistent radiation on air and space systems.
- The High Speed Environment Multi-burst Model evaluates infrared backgrounds, radio frequency attenuation, and channel parameters for interceptor systems to determine any degradation produced by a nuclear explosion.

- The Kinetic Impact Debris Distribution Model simulates fragment sizes, fragment velocities, and fragment sensor signatures from kinetic intercepts.

Test Facility Enhancement

Through a coordinated effort with the Defense Threat Reduction Agency, Army, and Air Force, Decade Radiation Test Facility enhancements at the Arnold Engineering Development Center provide the unique opportunity to test missile and space systems in multiple nuclear environments. The directorate is using past expertise in aboveground and underground testing to design and manufacture the test chamber that integrates the Decade facility with the articles under test. The chamber will be flexible enough to allow numerous systems and subsystems to be tested without chamber redesign. Interface with hardware-in-the-loop simulations is accommodated.

The Survivability Program maintains a balance between technology development and acquisition support, responding to space and missile defense system challenges now, and in the future.

For more information, please contact:

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